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EXAMINER

ANDREWS, MICHAEL

ART UNIT	PAPER NUMBER
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4176

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,525	Applicant(s) KLAUSSNER ET AL.	
	Examiner MICHAEL ANDREWS	Art Unit 4176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-8, 10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-8, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 10 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/24/2008, 3/13/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the Applicant's communication filed 12 June 2006 and the preliminary amendment concurrently filed therewith. In virtue of this communication and the preliminary amendment:

- Claims 1-9 were originally filed;
- Claims 1 and 9 were cancelled by the preliminary amendment;
- Claims 10-11 were added by the preliminary amendment; and thus
- Claims 2-8 and 10-11 are now pending in the instant application.

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 01 July 2003. Applicants are advised of possible benefits under 35 U.S.C. 119(a)-(d), wherein an application for patent filed in the United States may be entitled to the benefit of the filing date of a prior application filed in a foreign country. In this case, the prior application is 103 29 678 .6 filed in Germany on 01 July 2003. To assure the foreign priority filing date and the satisfaction of the enablement and description requirements of 35 U.S.C. 112, first paragraph, in addition to the certified copy of this prior application, an English language translation of this prior application must be submitted under 37 C.F.R. 1.55 in reply to this action. See MPEP, Sections 201.13 & 706.02(b); 37 C.F.R. 1.55.

Drawing Objections

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the rotor

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(recited in line 2 of claim 10 and line 2 of claim 11), motor housing (recited in lines 1-2 of claim 5), and webs (recited in line 3 of claim 5) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- [3a] (as described in line 7 of ¶ [0020]) is missing from figure 1.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification Objections

4. The amended specification of the submitted disclosure is objected to because of the following informalities:

- Page 1, ¶ [0002]; remove the last word of the paragraph, "here"; and
- page 4, ¶ [0020]; insert--[3]-- after "grooves" (second occurrence).

Appropriate correction is required.

Claim Objections

5. Claims 7-8 and 10-11 are objected to because of the following informalities:

- Claim 7, line 2; replace "includes" with "include";
- Claim 8, line 2; replace "includes" with "include";
- Claim 10, line 9; "an" between "by" and "insulation" should be deleted;
- Claim 11, line 7; "an" between "by" and "insulation" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high-temperature" in claim 7 is a relative term which renders the claim indefinite. The term "high-temperature" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Thermoplasts can withstand a broad range of temperatures, making it impossible to determine what types of thermoplasts are being claimed. Clarification is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 6 and 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Du et al. (Publication No. US 2004/0056538 A1), hereinafter referred to as “Du”.

With respect to claim 10, Du discloses an electric motor [100] (see figure 5) for a drive of a vehicle (This is intended use language and does not further limit the claim.), comprising:

- a rotor [102] (see figure 5; labeled as an “armature”);
- a stator [104] (see figure 5; described in ¶ [0078]) formed from a laminated core [106] (see figure 5; referred to as a “lamination stack”) and provided with grooves [108] (see figure 5; referred to as “slots”) for arrangement of at least one winding [12] (see figure 1) ending in the winding heads [117] (see figure 5; described in ¶ [0078]); and
- a cooling system [22] (see figure 1; described in ¶ [0008]) for circulating cooling air [30] (see figure 2) through the electric motor [100] (figure 5);

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wherein the winding [12] (figure 1) is formed from round wires [16] (see figure 4) which are each embraced by an insulation (see ¶ [0016] and [0019]; the round wires are described as being insulated), and the winding heads [117] (figure 5) are embedded in a temperature-resistant elastic material (see ¶ [0019]; Du states that the winding insulation could consist of “epoxy coatings”, epoxy being both temperature-resistant and elastic) for protection against external influences (This is intended use language and does not further limit the claim.), so that the electric motor satisfies at least the requirements of thermal class 200 (This is intended use language and does not impose any further limitation, as satisfying said requirements of thermal class 200 is a result of the winding heads being embedded in a temperature-resistant material.).

With respect to claim 11, Du discloses a drive [100] (see figure 5), in particular for a vehicle (This is intended use language and does not further limit the claim.), comprising an electric motor [100] (see figure 5) which includes a rotor [102] (see figure 5; labeled as an “armature”), a stator [104] (see figure 5; described in ¶ [0078]) formed from a laminated core [106] (see figure 5; referred to as a “lamination stack”) and provided with grooves [108] (see figure 5; referred to as “slots”) for arrangement of at least one winding [12] (see figure 1) ending in the winding heads [117] (see figure 5; described in ¶ [0078]), and a cooling system [22] (see figure 1; described in ¶ [0008]) for circulating cooling air [30] (see figure 2) through the electric motor [100] (figure 5), wherein the winding [12] (figure 1) is formed from round wires [16] (see figure 4) which are each embraced by an insulation (see ¶ [0016] and [0019]; the round wires are described as being

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insulated), and the winding heads [117] (figure 5) are embedded in a temperature-resistant elastic material (see ¶ [0019]; Du states that the winding insulation could consist of “epoxy coatings”, epoxy being both temperature-resistant and elastic) for protection against external influences (This is intended use language and does not further limit the claim.), so that the electric motor satisfies at least the requirements of thermal class 200 (This is intended use language and does not impose any further limitation, as satisfying said requirements of thermal class 200 is a result of the winding heads being embedded in a temperature-resistant material.).

With respect to claim 6, Du discloses the limitations of claim 10, as stated above, wherein the grooves [14] (see figure 4) are lined with a groove side insulation [15] (see figure 4) formed from a material containing mica (see ¶ [0020] and [0116]).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

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Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of King (U.S. Patent No. 3,932,928).

With regard to claim 2, Du discloses the limitations of claim 10, as stated above, except that Du does not expressly disclose that the temperature-resistant elastic material is a silicone rubber.

King discloses that silicone rubber can be used as a temperature-resistant elastic material (see abstract, lines 4-5; lines 12, 17-18 of column 1). King teaches that silicone rubber can be used as an electrical insulator to make stator windings capable of withstanding high temperatures and pressures (lines 1-5 of column 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the motor device of Du by embedding the winding heads in a temperature resistant elastic material such as silicone rubber as taught by King, for the insulation thereof, since King teaches that such silicone rubber material can be used as an electrical insulator and that it is capable of withstanding high temperatures and pressures (see lines 12, 17-18 of column 1; lines 1-5 or column 2).

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With regard to claim 3, Du discloses the limitations of claims 2 and 10, as stated above. Not stated above, Du also discloses that the cooling system [22] (see figure 1) is configured to allow air [30] (see figure 2) to flow around the winding heads [117] (see figure 5; described in ¶ [0009]).

Du does not expressly disclose that the temperature-resistant elastic material is a silicone rubber.

King discloses that silicone rubber can be used as a temperature-resistant elastic material (see abstract, lines 4-5; lines 12, 17-18 of column 1). King teaches that silicone rubber can be used as an electrical insulator to make stator windings capable of withstanding high temperatures and pressures (see lines 1-5 of column 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the motor device of Du by embedding the winding heads in a temperature resistant elastic material such as silicone rubber as taught by King, for the insulation thereof, since King teaches that such silicone rubber material can be used as an electrical insulator and that it is capable of withstanding high temperatures and pressures (see lines 12, 17-18 of column 1; lines 1-5 of column 2).

13. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of Stahl et al. (U.S. Patent No. 6,437,468 B2), hereinafter referred to as "Stahl".

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With regard to claim 4, Du discloses the limitations of claim 10, as stated above, except that Du does not expressly disclose that the stator is constructed with cooling bores through which the cooling air flows.

Stahl discloses that the stator can be constructed with cooling bores [46] (see figure 3) through which the cooling air flows (see lines 46-49 of column 3). Stahl teaches that cooling bores, or cylindrical holes, through the components of the motor can allow air to flow for the purpose of cooling said components.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the motor device of Du by using cooling bores to allow cooling air to flow as taught by Stahl, for the cooling thereof, since Stahl teaches that such cooling bores can be used to allow cooling air to flow through and cool a motor (see lines 46-49 of column 3).

With regard to claim 5, Du discloses the limitations of claim 10, as stated above, except that Du does not expressly disclose that the stator is connected to the motor housing by webs, with the cooling air flowing between the motor housing and the stator.

Stahl discloses that the stator is connected to the motor housing by webs (see lines 5-13 of column 6), with the cooling air flowing between the motor housing and the stator [16, 18, 12G] (see figure 2; and lines 6-7 of claim 2). Stahl teaches that the housing can be connected to the stator with a web, containing a plurality of air passages, that allows air to flow and cool the motor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the motor device of Du by using webs to

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connect the stator to the motor housing as taught by Stahl, since Stahl teaches that such webs can be used to allow cooling air to flow through air passages that allow air to flow and cool the motor (see lines 13-20 of column 6).

14. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Du in view of Chochoy et al. (Publication No. US 2003/0006654 A1), hereinafter referred to as "Chochoy".

With regard to claim 7, Du discloses the limitations of claim 10, as stated above, except that Du does not expressly disclose that the insulation of the round wires includes at least one high-temperature thermoplast applied by extrusion.

Chochoy discloses that the insulation of the round wires can include at least one high-temperature thermoplast [34, 36] (see figure 2) applied by extrusion. Chochoy teaches that windings can be made up of round wires [34] (see figure 2), and that the insulation [36] (see figure 2) for those windings can be "of the thermoplastic type, the melting point of which is higher than the maximum working temperature of the rotary electrical machine" (see ¶ [0046]). Although Chochoy does not explicitly disclose the method of extruding the thermoplastic material, this is not a functional statement as the insulation would have the same effect regardless of how it was initially applied to the winding.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the motor device of Du with thermoplastic material insulating the round wires as taught by Chochoy, since Chochoy teaches that the insulation of windings can be thermoplastic polymers (see line 1 of ¶ [0046]).

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With regard to claim 8, Du discloses all of the limitations of claim 10, as stated above, except that Du does not expressly disclose that the insulation of the round wires includes at least one layer of polyimide film.

Chochoy discloses that the insulation of the round wires [32] (see figure 1) includes at least one layer of polyimide film (see lines 5-6 of ¶ [0087]). Chochoy teaches that the electrical winding is coated with at least one layer of insulation, “one of which is of the polyimide type”.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the motor device of Du by applying polyimide material to the round wires as taught by Chochoy, for the insulation thereof, since Chochoy teaches that windings can be insulated by multiple layers of polyester, one of which is the polyimide type (see lines 4-6 of ¶ [0087]).

Citation of Relevant Prior Art

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art:

- Baumann et al. (US Patent No: 6,140,590) discloses using insulation containing mica on stator windings;
- Frauenhofer et al. (Publication No: US 2007/0117478 A1) discloses supporting a stator winding within a support structure with web-type support teeth; and
- Kawazoe et al. (US Patent No: 4,908,541) discloses forming slits between projecting portions of a stator coil to allow air to pass and cool the coil.

Inquiry

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ANDREWS whose telephone number is (571)270-7554. The examiner can normally be reached on Monday through Thursday between the hours of 8:30 and 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thuy V. Tran can be reached on (571)272-1828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MICHAEL ANDREWS/
Examiner, Art Unit 4176

/Thuy Vinh Tran/
Supervisory Patent Examiner, Art Unit 4176